



**Chesapeake Bay Program**  
A Watershed Partnership

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# Press Release

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## **First-time Chesapeake Ecological Forecast Links Environmental Monitoring Data to Watershed Weather and Bay Health**

*Poor summer water quality conditions likely for Chesapeake Bay in 2005*

**Annapolis, Md. (May 9, 2005)** – Pollution-laden runoff from heavy spring rains across the Bay watershed likely will lead to poorer than average Chesapeake Bay water quality conditions this summer, according to a new ecological forecast developed by a team of researchers working with the Chesapeake Bay Program.

Based on an analysis of spring weather conditions and twenty years of Chesapeake Bay monitoring data, the ecological forecast provides resource managers and the public with an improved context for understanding Bay water quality conditions and offers additional guidance to Bay restoration leaders. Scientists and researchers from the University of Maryland and the Maryland Department of Natural Resources worked with colleagues from several state and federal agencies to develop the forecast.

“The forecast indicates that recent weather conditions and heavy pollutant loads could lead to a bad summer for the Bay,” said project leader and scientist William Dennison of the University of Maryland Center for Environmental Science. “Weather is not the only driving factor behind poor summer water quality conditions, but it plays a significant role in transporting pollution into the rivers that feed the Bay.”

The forecast provides insight to levels of anoxic – or oxygen-deprived – waters likely to occur this summer in the Bay’s mainstem. The forecast is based on the amount of pollution flowing into the Bay in spring months and the volume of anoxic water in the summer. Scientists forecast that 2005 summer anoxic conditions will likely be moderate to severe, and could rank among the five worst summers in the past twenty years. The impact of low oxygen levels on the Bay’s crabs, oysters, fish and other living resources is difficult to predict at this time, but will be closely monitored by Bay scientists throughout the summer.

The forecast also suggests a high likelihood of harmful algal blooms in the tidal Potomac River this summer. Scientists have drawn a relationship between annual and seasonal Potomac River flow and the likelihood of blue-green algae (cyanobacteria, *Microcystis*) blooms. Scientists forecast a bloom beginning in late spring to early summer, lasting for approximately two and half months, over more than ten miles of the river at its peak condition. Contact with, inhalation or consumption of water with *Microcystis* and related blue-green algae blooms can cause illness in humans and death in livestock or pets. The public will be able to view real-time water quality information for the Maryland portion of the Bay throughout the summer at [www.eyesonthebay.net](http://www.eyesonthebay.net).

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“These ecological forecasts give us more insight into the complex interactions between algae blooms, low oxygen and nutrient pollution for Bay health. These tools are a more proactive approach to guiding our management strategies,” said Dr. Peter J. Tango, Chief of Quantitative Ecological Assessment for the Maryland Department of Natural Resources. “In the long road to Bay restoration, understanding the extent and magnitude of low-oxygen zones and algal blooms provides the restoration effort with critical insights that will guide future policy decisions and ultimately, the success of the Bay's restoration.”

Weather plays a large role in the health of the Bay's waters, as about three quarters of nutrient pollution entering the estuary comes from runoff – or non-point – sources. Nitrogen and phosphorus, the primary nutrients, come from fertilizer, human and animal wastes, as well as emissions from cars and power plants. During rain events, excess nutrients wash into local streams and rivers from agricultural lands, city streets, rooftops and residential lawns. The excess nutrients then flow downstream into the Chesapeake Bay, where they cause an overabundance of algae, resulting in deteriorated water quality. Significant algal blooms can block sunlight from reaching underwater grasses, which produce oxygen needed by local aquatic life.

“While we can't rely on Mother Nature to call off the rains and reduce the amount of runoff, we can reduce the amount of pollution in that runoff by better managing the lands that surround the Bay,” said Bay Program Monitoring and Analysis Subcommittee Chair Carlton Haywood of the Interstate Commission on the Potomac River Basin. “Today's nutrient pollution reduction efforts by farmers, wastewater treatment plant operators, watershed residents and local, state and federal governments will help improve water quality conditions in future years.”

Bay states and the District of Columbia are continuing to implement on-the-ground water quality improvement programs that help reduce algal blooms and improve oxygen levels in the Bay and its rivers. By upgrading sewage treatment plants, planting streamside forest buffers and minimizing runoff from developed and agricultural lands, Bay Program partners are working to bring the Bay back into balance.

While the summer forecast is built upon relationships between past environmental pressures and resulting water quality, several overriding influences – such as changes in temperature, precipitation and river flow – could impact the accuracy of this forecast. Warmer or continued wet conditions could contribute to worsening conditions; while cooler and drier weather could prompt improved water quality.

The summer 2005 dissolved oxygen forecast focuses only on the deepest waters of the Bay. The overall volume of water with less than ideal dissolved oxygen concentrations – called hypoxia – is much larger. Bay scientists, however, have been unable to establish a strong enough relationship between spring rains and pollution loads to forecast this larger area of relatively low oxygenated waters.

In addition to dissolved oxygen and algal bloom forecasts, Bay Program scientists plan to forecast 2005 underwater grass abundance later this month. Scientists will track actual versus forecasted conditions throughout the summer and post updates on the Chesapeake Bay Program website at <http://www.chesapeakebay.net/bayforecast.htm>.

The Chesapeake Bay watershed is home to more than 16 million people living in parts of Delaware, Maryland, New York, Pennsylvania, Virginia, West Virginia and the District of Columbia. Since 1983, the Chesapeake Bay Program has coordinated the restoration of the Bay and its watershed. For more information, visit <http://www.chesapeakebay.net>.